Overview of the Third Quarter 2009 Surveillance and Maintenance Report for the LM Rocky Flats Site

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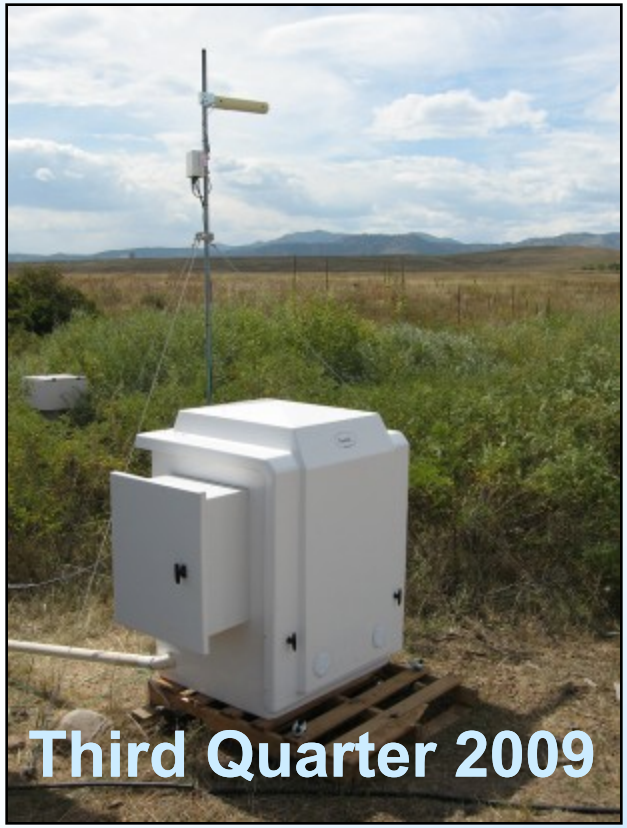
Surface Water Monitoring and Operations



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Pond Operations – Third Quarter 2009

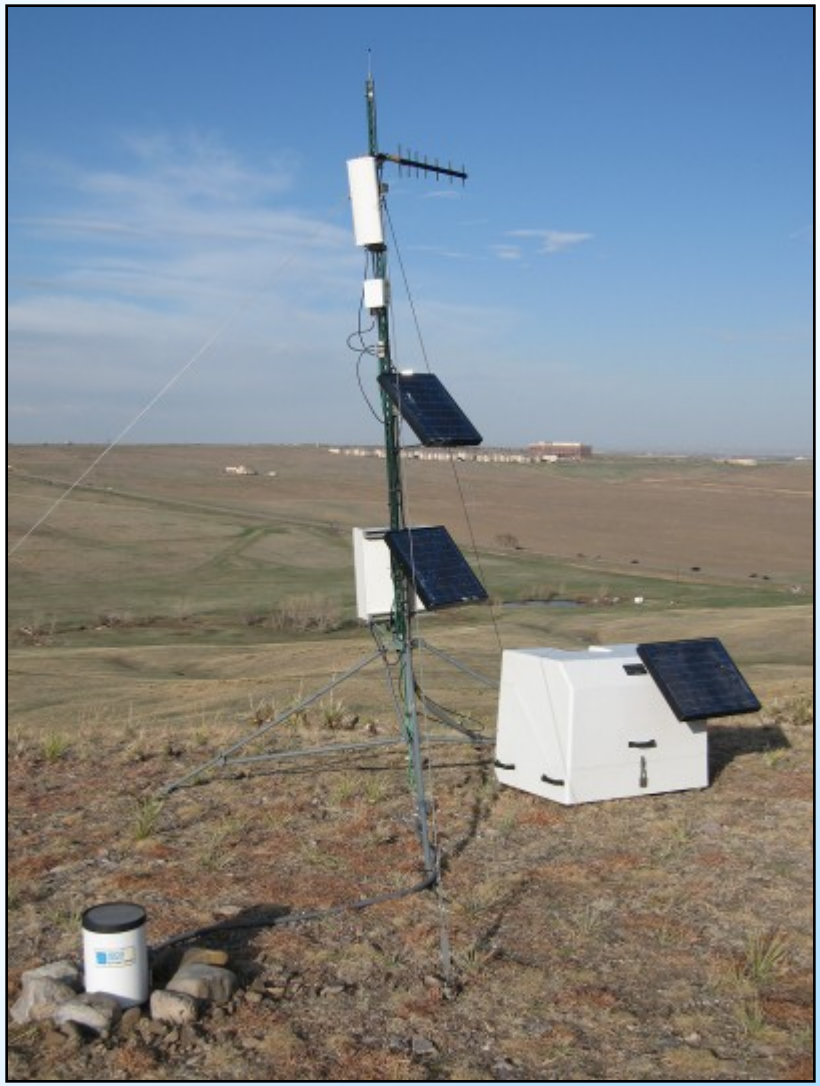
- Terminal Pond Discharges:
  - None
- Transfers:
  - None
- Pond Levels:
  - As of October 1, 2009, Ponds A-3, A-4, B-5, and C-2 and the Landfill Pond were holding approximately 19.2 MG (19.4 percent of capacity)

December 30, 2009,
Pond Levels

- Landfill (21.3 percent)
- A-3 (11.2 percent)
- A-4 (10.8 percent)
- B-5 (26.0 percent)
- C-2 (11.7 percent)

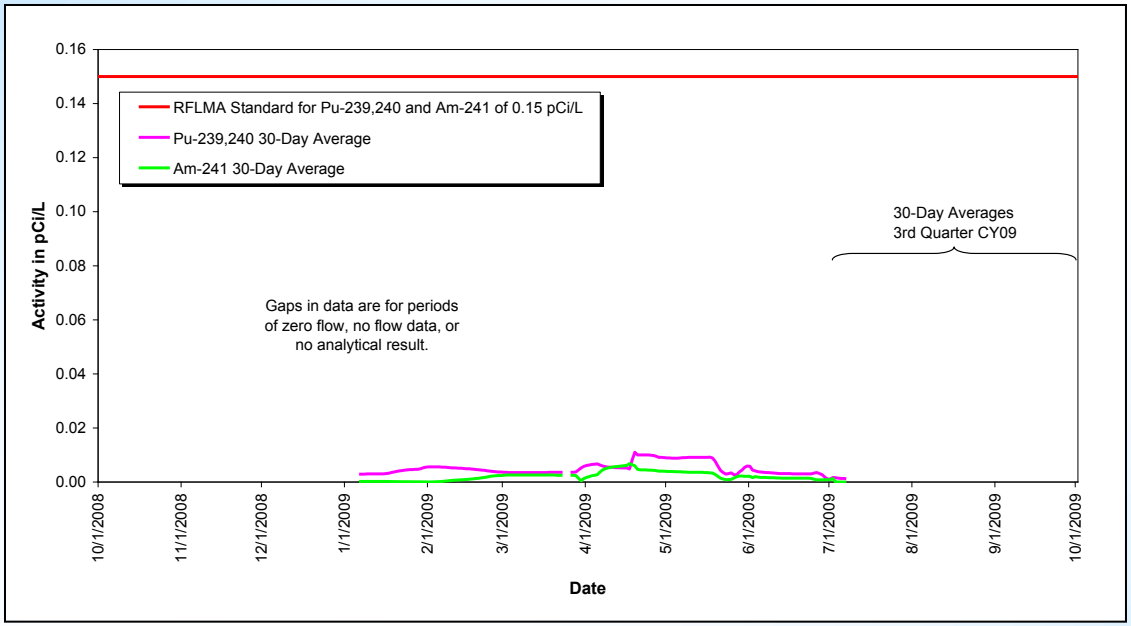
Hydrologic Data – Third Quarter 2009

- Precipitation
  - 3.34 inches total precipitation
  - 82 percent of WY 93–08 average
- Flow rates (percentage of average):
  - GS01 (9 percent)
  - GS03 (no flow)
  - GS10 (21 percent)
  - SW027 (no flow)
  - SW093 (16 percent)

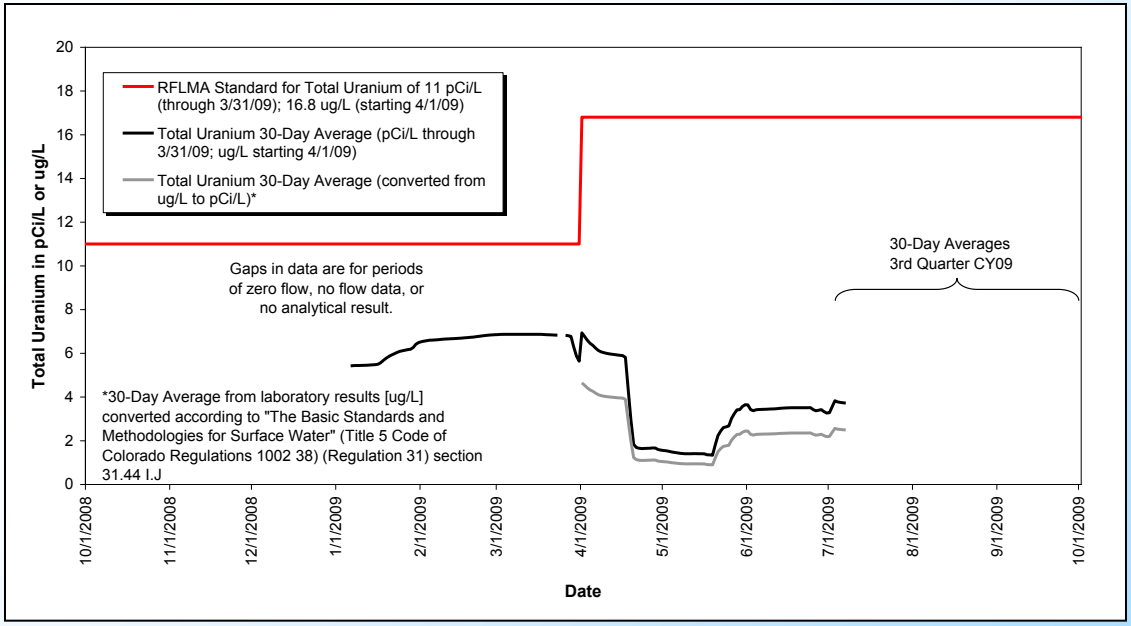


POC GS01

- Plutonium and Americium

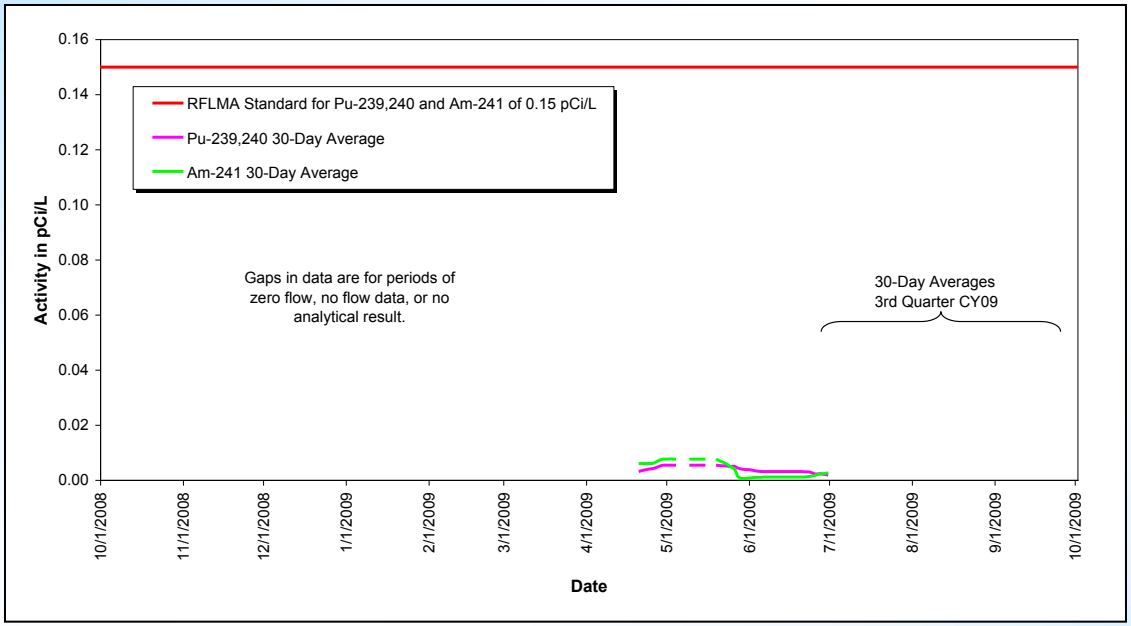


- Total Uranium

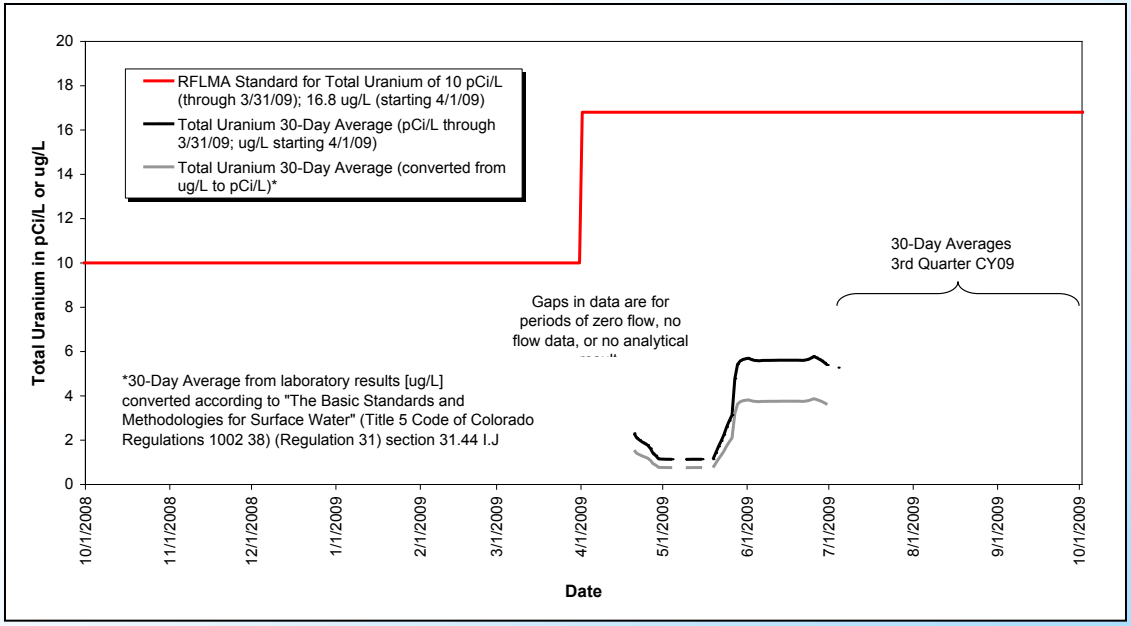


POC GS03

- Plutonium and Americium

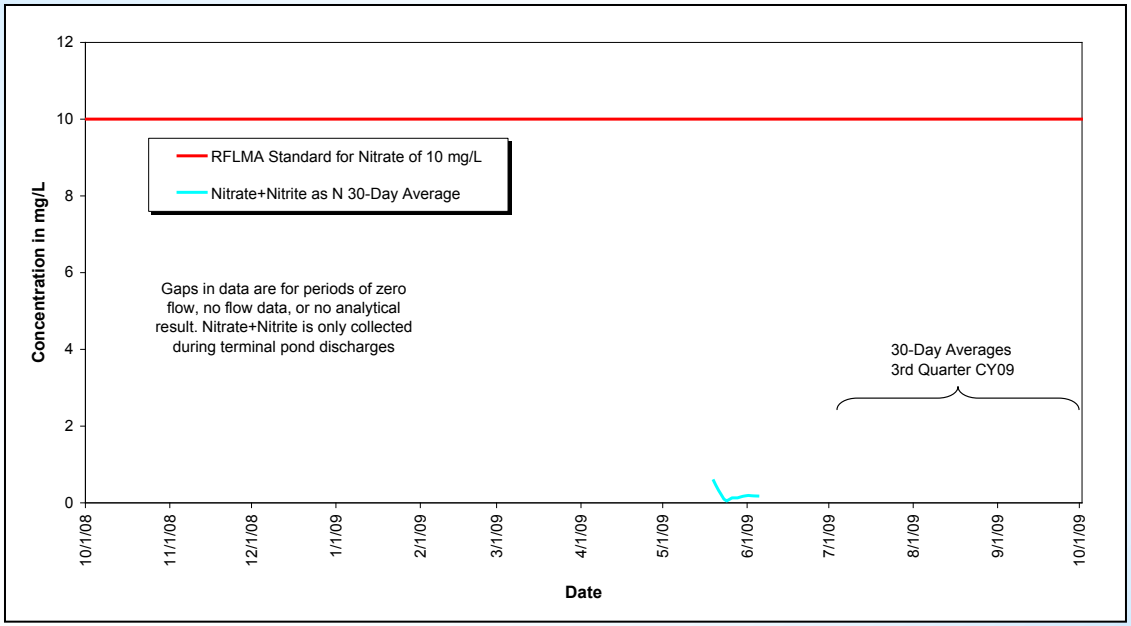


- Total Uranium



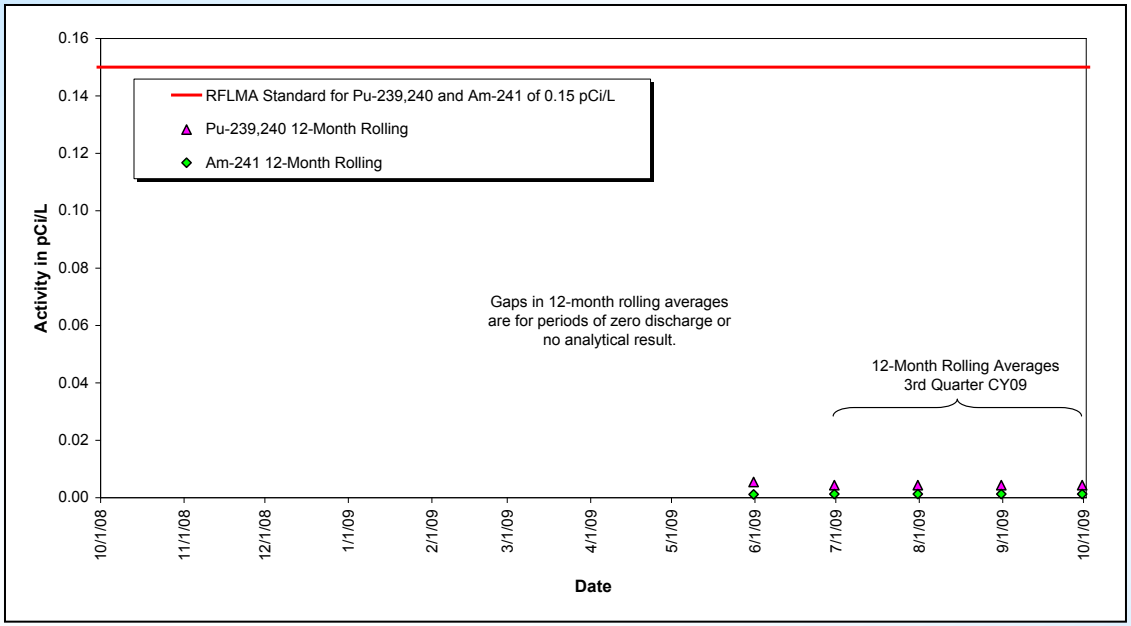
POC GS03

- Nitrate + Nitrite as Nitrogen

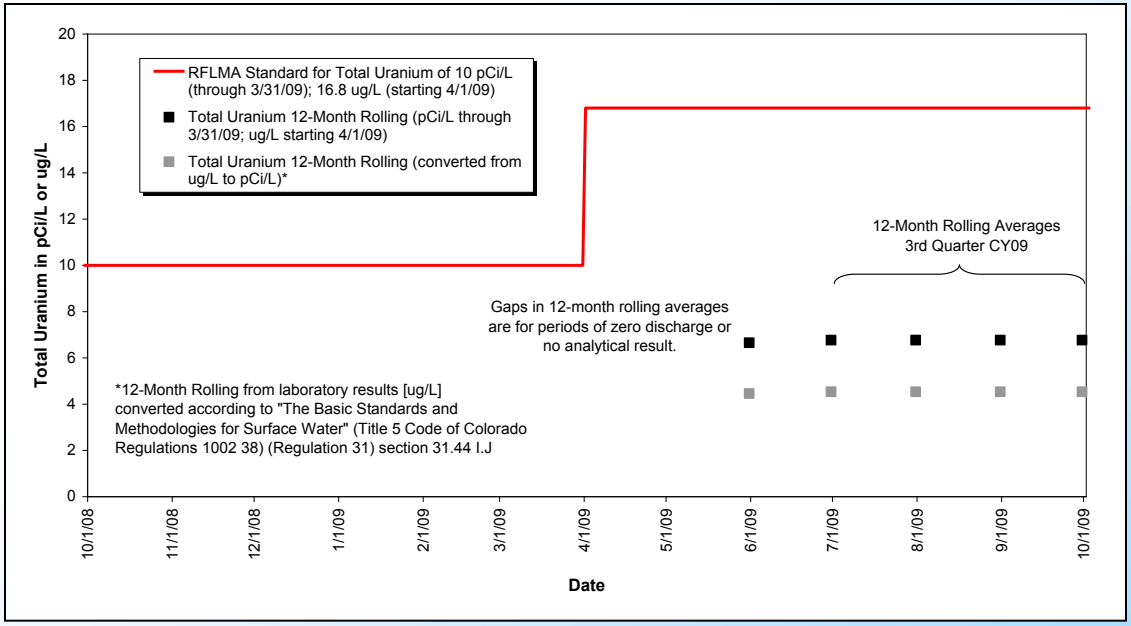


POC GS08

- Plutonium and Americium



- Total Uranium



POC GS08

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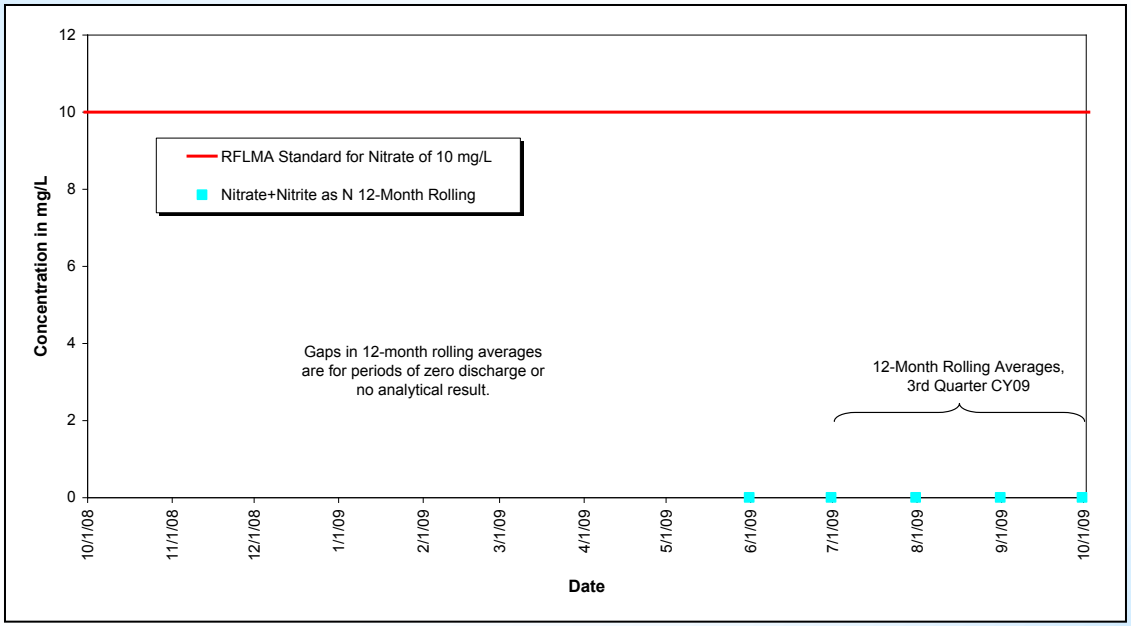
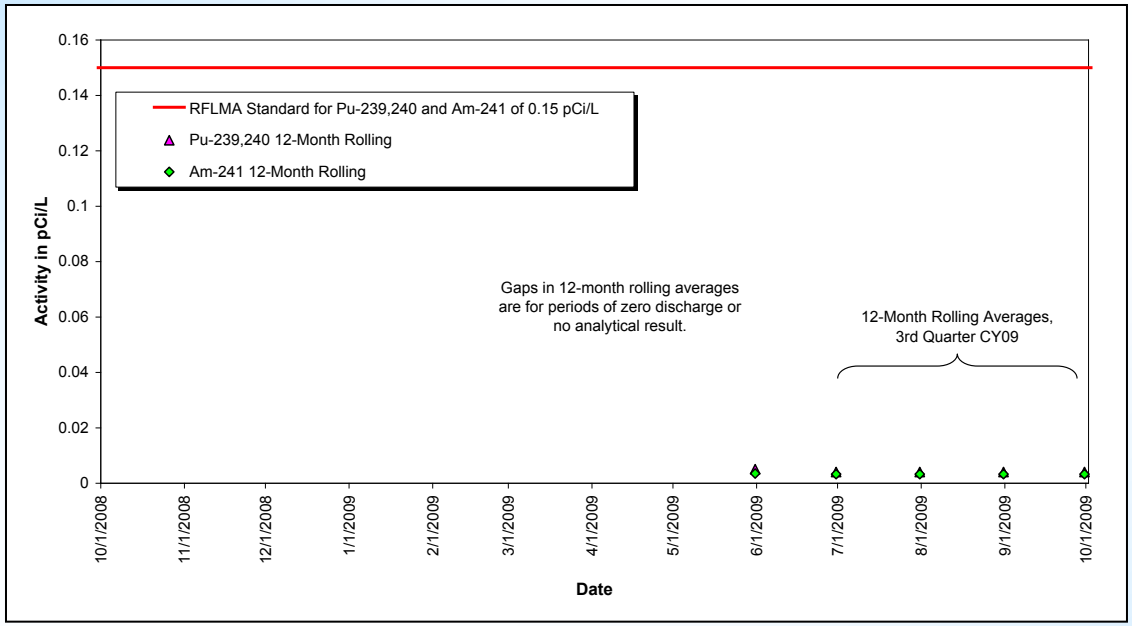
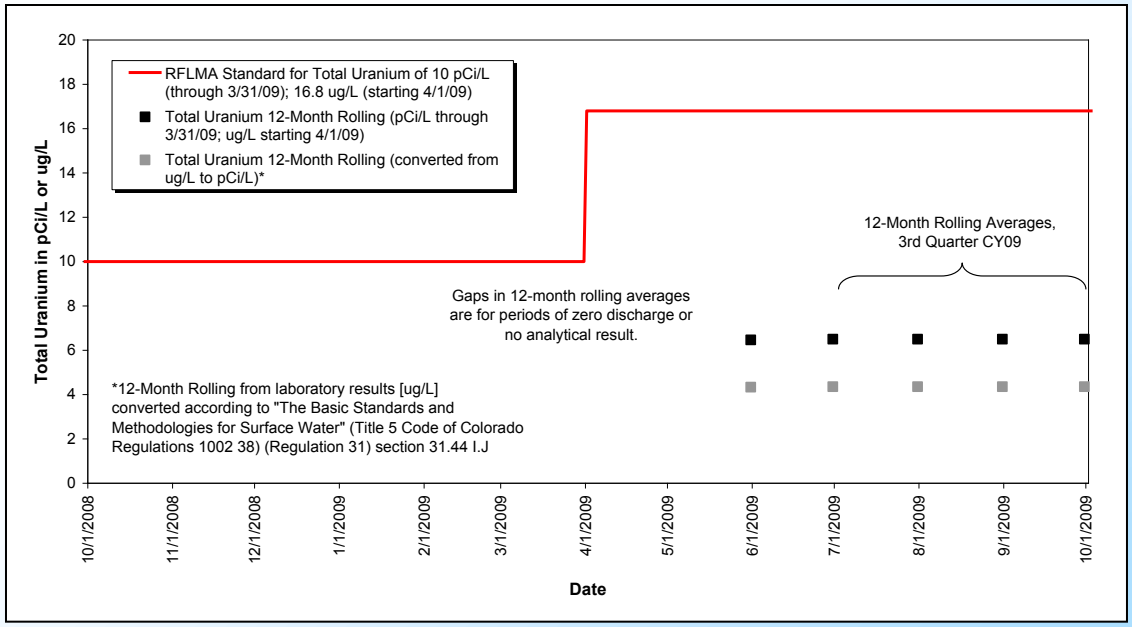


POC GS11

- Plutonium and Americium



- Total Uranium



POC GS11

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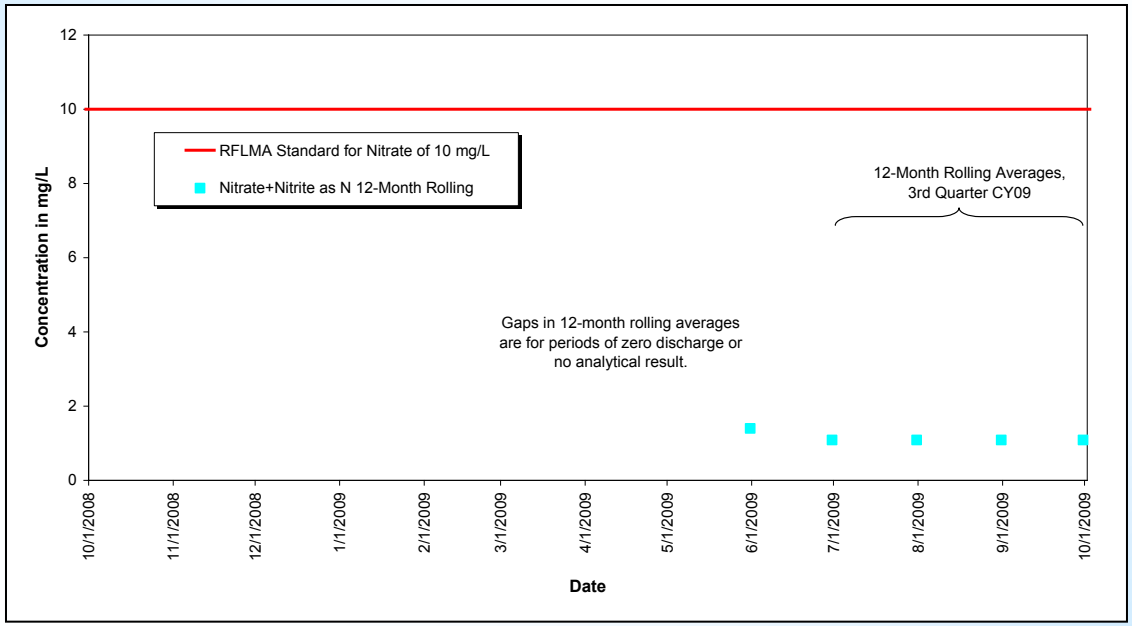
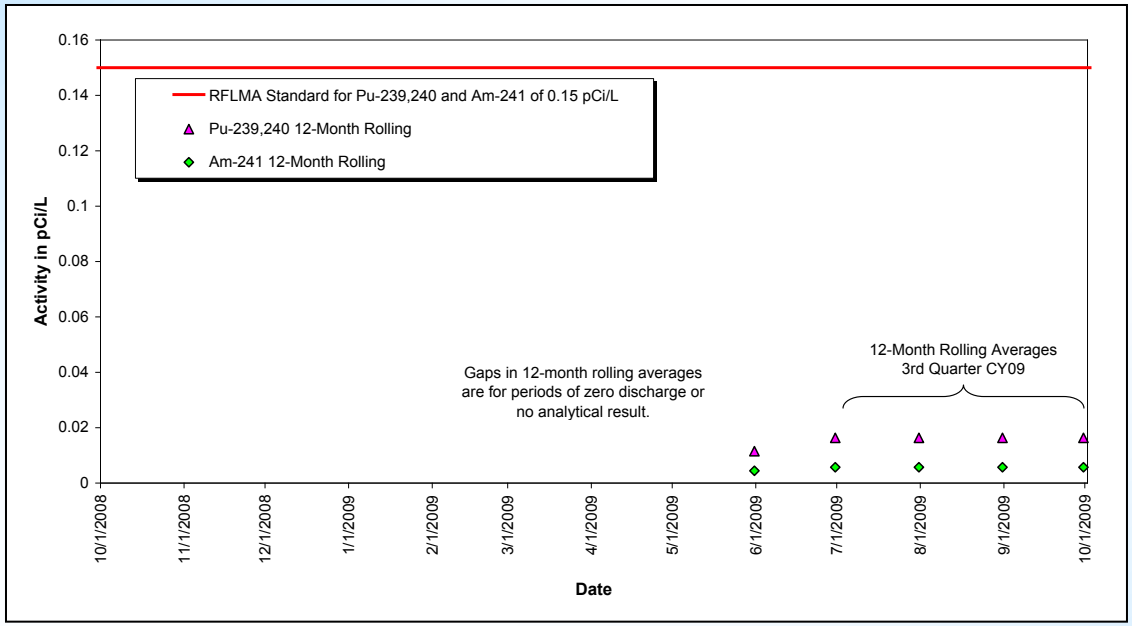
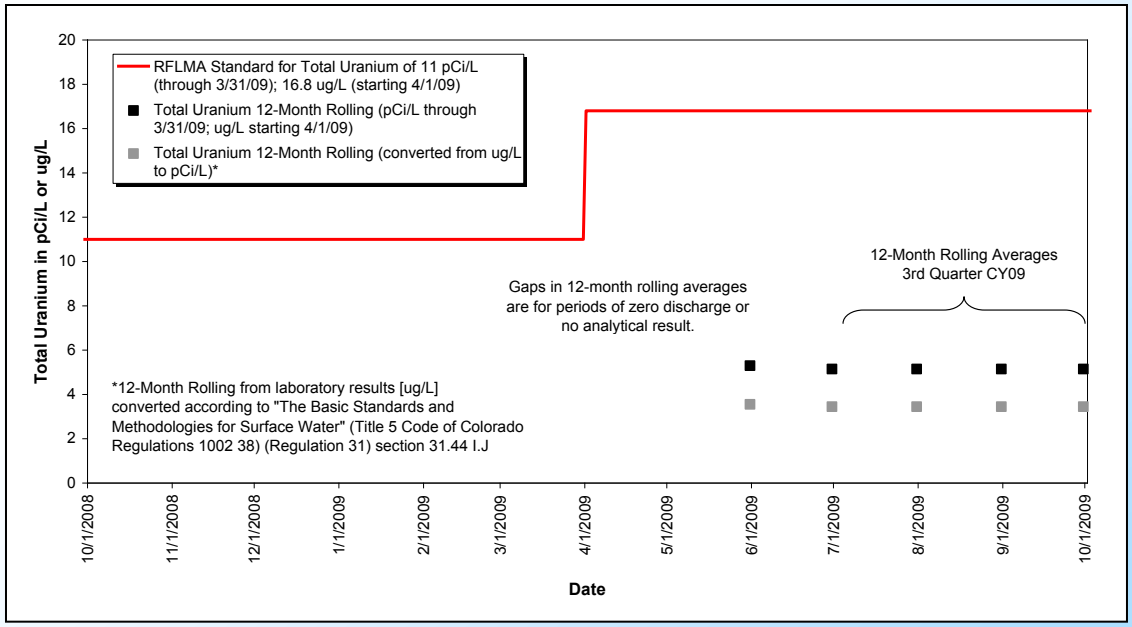


POC GS31

- Plutonium and Americium



- Total Uranium



Point of Evaluation Monitoring – Third Quarter 2009

- Water quality at all points of evaluation was below applicable standards

Performance Monitoring – Third Quarter 2009 Original and Present Landfills

- **Original Landfill (OLF):** Surface water quality results during third quarter 2009 showed acceptable water quality
- **Present Landfill (PLF):** Surface water quality results triggered monthly sampling for vinyl chloride
  - Vinyl chloride was not detected in the second monthly sample; monthly sampling was discontinued

Questions?

Groundwater Monitoring and Operations

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RFLMA Monitoring

- Third quarter is a light sampling quarter
  - All RCRA wells (six at PLF, four at OLF)
- Results will be evaluated in the 2009 annual report

ETPTS Project Update

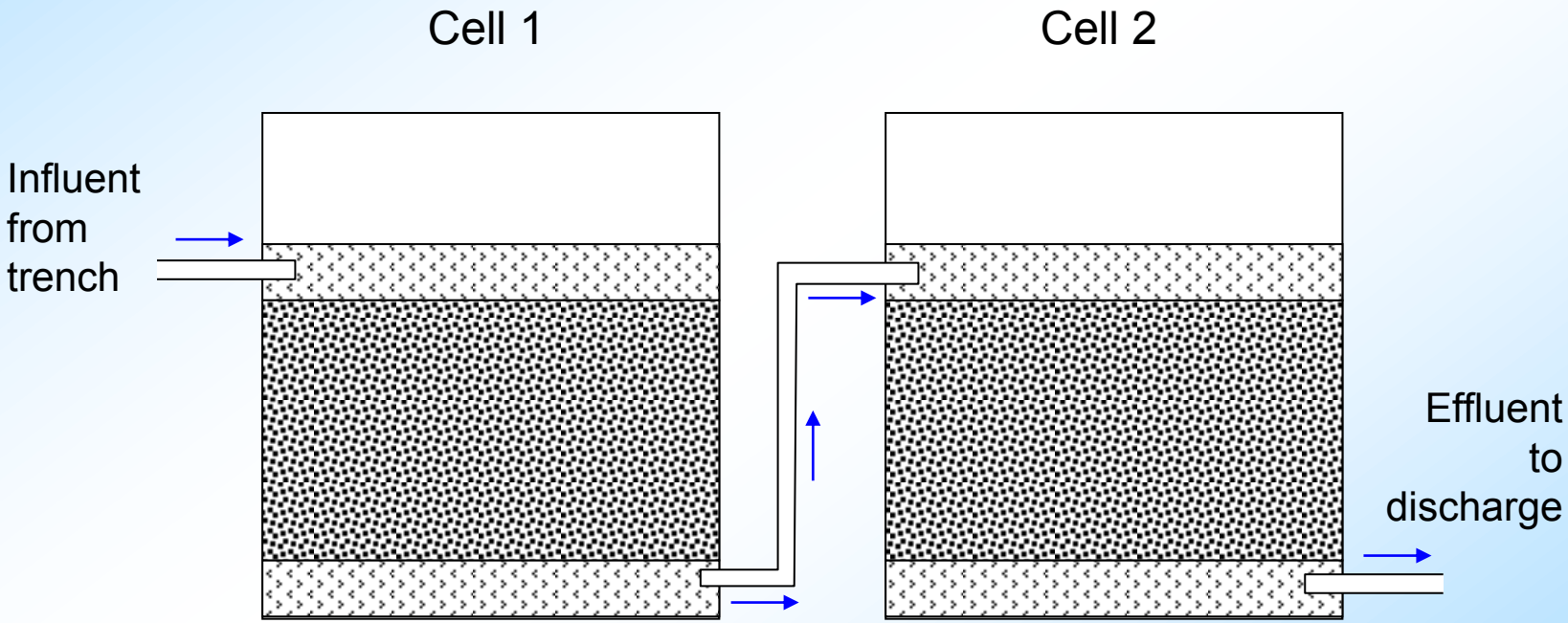
- Media replacement and system upgrades project
  - Completed November 9
  - System operation resumed immediately
  - Preliminary results indicate system is operating properly

ETPTS Project (continued)

ETPTS Project (continued)

ETPTS Project (continued)

- Previous configuration: series, downflow



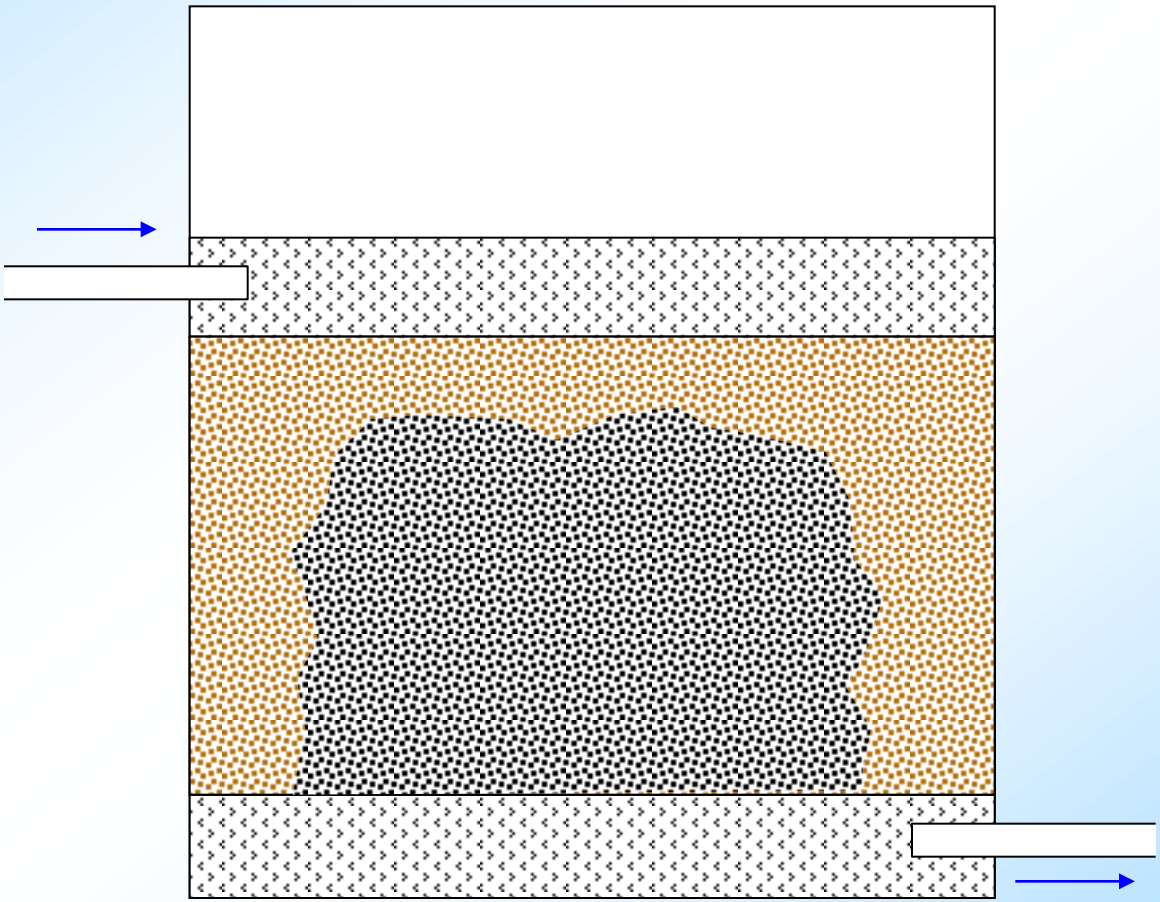
ETPTS Project (continued)

- Potential effects of series flow:
  - Cell 1 media clogs or becomes ineffective more rapidly and more thoroughly than Cell 2 media
  - Media replacement is required sooner
  - Cell 2 media gets replaced before it really needs it (cost efficiencies in mobilization/demobilization, labor, equipment, etc.)
- Potential effects of downflow:
  - Media more readily develops preferential pathways (water trickles downward with gravity assistance, rather than seeping upward against gravity)
  - Cannot push more water through the system than media permeability allows – water will simply overtop the cell
  - Must replace media as dictated by media permeability (clogging) rather than by effluent water quality

ETPTS Project (continued)

ETPTS Project (continued)

- Much of central portion of media was not oxidized; was ineffective in water treatment

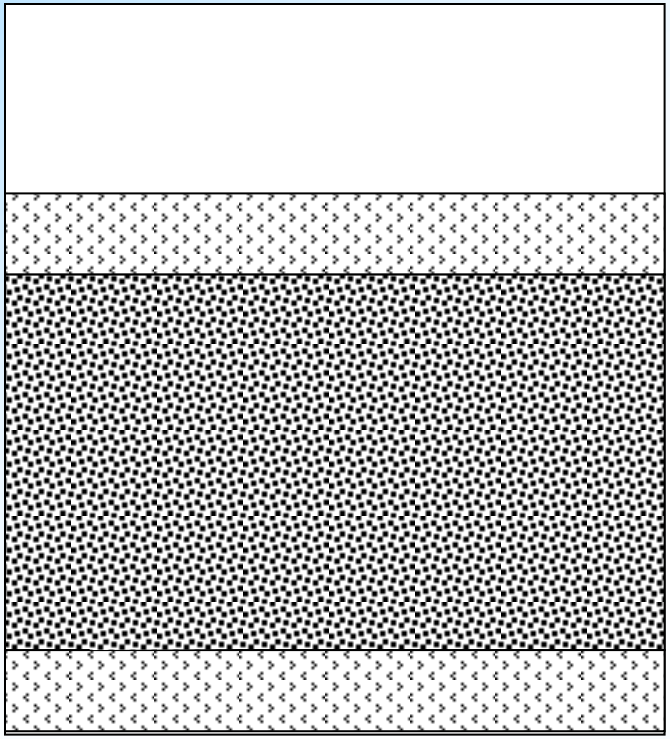


ETPTS Project (continued)

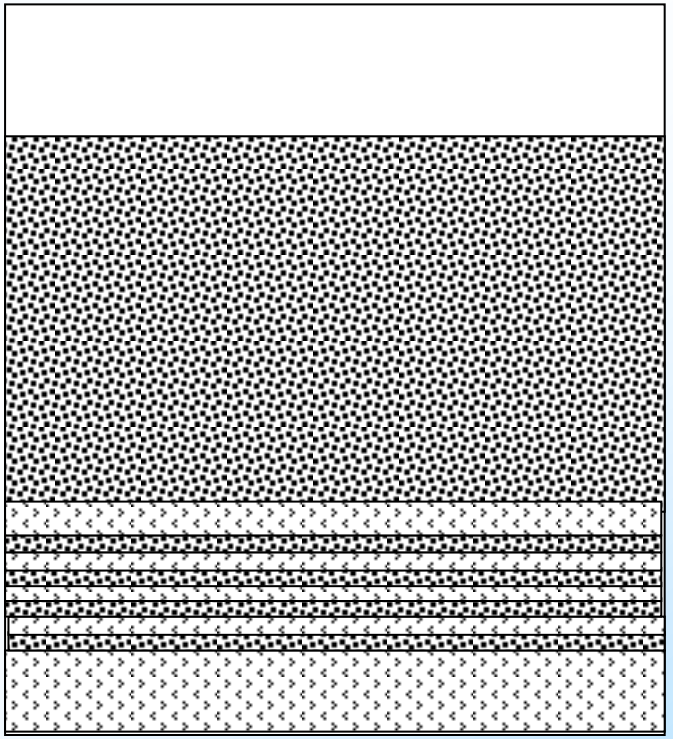
- Addressed short-circuiting and improved treatment effectiveness
  - Redesigned media
  - Used improved distribution gallery design
  - Changed primary operating configuration
- Prepared for next media replacement
  - Installed liner around inside of cell so media will not adhere to cell walls (in the past, has required jackhammer to remove)
- Reduced long-term maintenance needs
  - Eliminated buried valves (can cause problems; SPPTS in 2006)
  - Installed new flow-control vault directly between cells (easy access, eliminates pipe “spaghetti” that can lead to clogging)
  - Most pipes are now inside pipe liners; if clogging develops, can easily replace during media replacement without excavating

ETPTS Project (continued)

Old media design

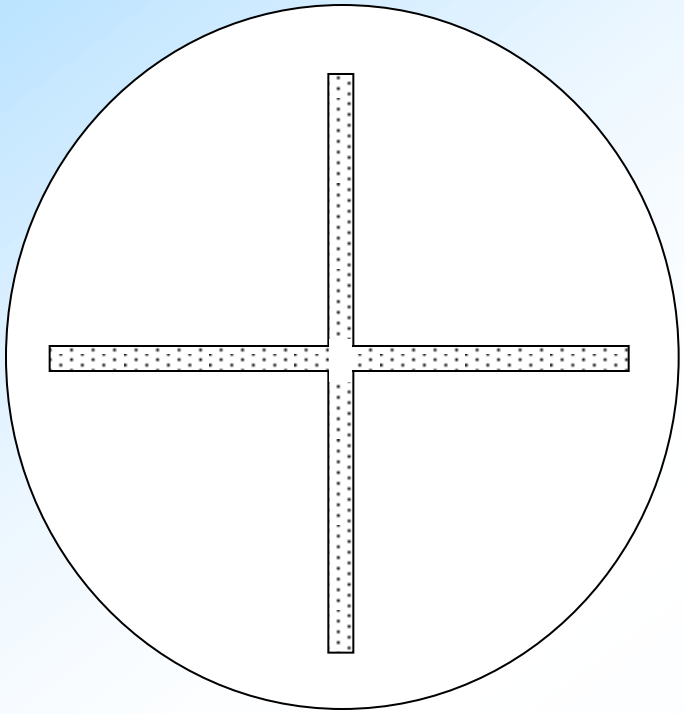


New media design



ETPTS Project (continued)

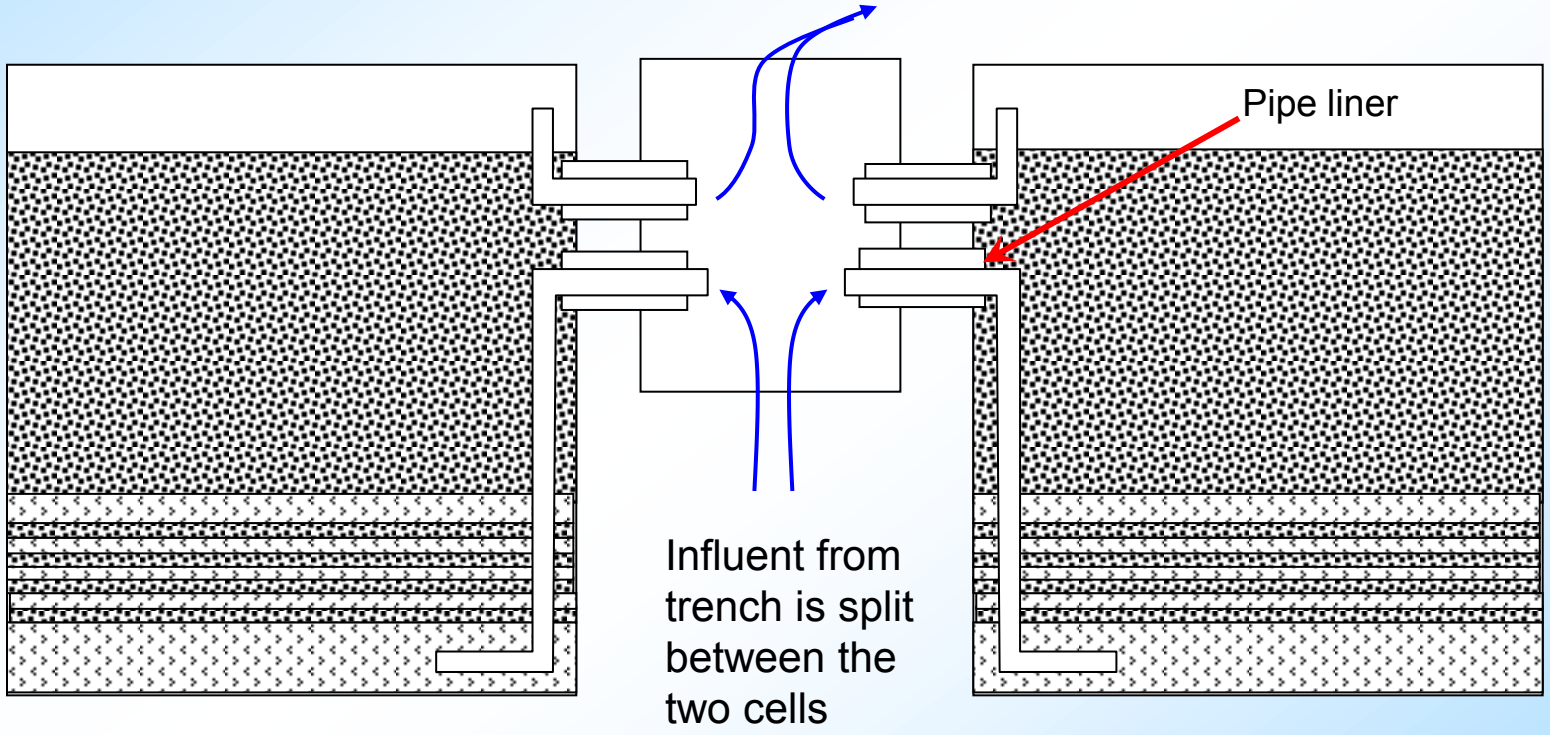
Old distribution gallery



New distribution gallery

ETPTS Project (continued)

New configuration:
parallel upflow



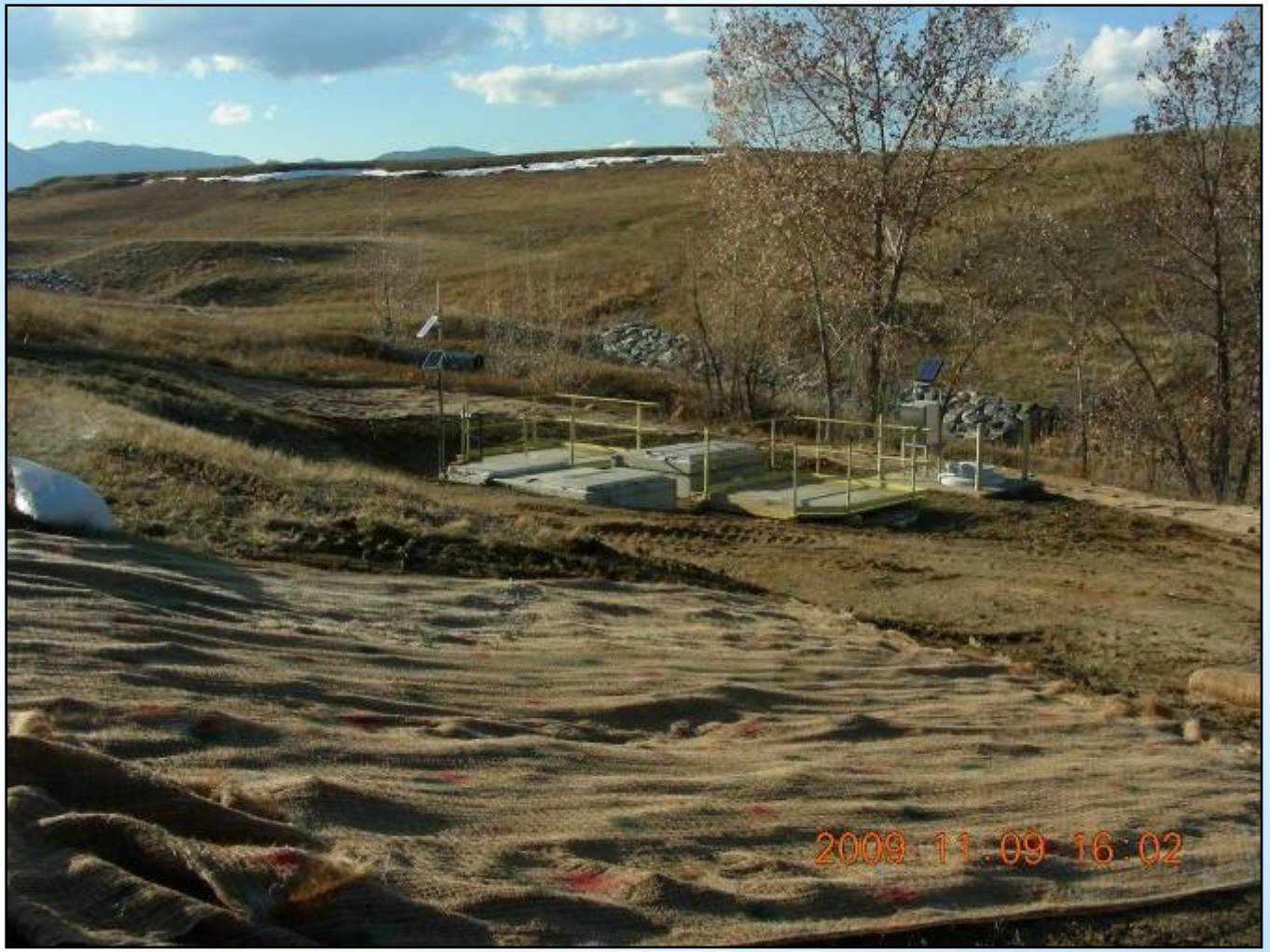
ETPTS Project (continued)

ETPTS Project (continued)

ETPTS Project (continued)

- Buried valves replaced by flow-control vault

ETPTS Project (continued)



SPPTS Update

- Nitrate and uranium concentrations at SPOUT remain consistent with past report
- Insulation was added to cells and vaults to reduce effects of cold temperatures
- Phosphate (essential nutrient) was added to carbon source feeding Phase III Cell A
- Phase II: Uranium treatment cell
  - New technical advisor (geochemist) was added to SPPTS technical team to assist investigations of incomplete treatment
- Results will be provided and discussed in the 2009 annual report

Questions?

Site Operations

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OLF Inspections

- Monthly inspections at the OLF were completed on July 30, August 26, and September 28
- A vegetation inspection was completed on August 20

OLF Seeps

- Seep 4 had some surface expression, but did not show any surface flow. This is likely due to the rock drain that was installed during the West Perimeter Channel Regrade Project.
- Seep 8 flowed at a rate of 1 to 2 gpm throughout the third quarter
- The rock drain located at the base of the West Perimeter Channel flowed temporarily after precipitation events, but was dry throughout most of the third quarter
- Seep 7 showed a surface flow of approximately 0.1 gpm during the July inspection. The area was dry during subsequent inspections following the adjustment completed on the drain extension

OLF Seep 7 Drain Extension Adjustment

- As part of the OLF geotechnical investigation, an extension to the original Seep 7 subsurface drain was installed in the OLF cover soil in September 2008
- Surface flow along the eastern edge of the drain (below inclinometer 82508I) was observed during second quarter 2009
- The planned adjustment to hand-excavate the drain edge and open the geotextile fabric to make the edge more porous was made on July 23 and August 19 and is completed
- No further surface expression was noted in this localized area throughout the rest of the third quarter

OLF Settlement Monuments and Inclinometers

- Settlement monuments were surveyed on September 30; data are within the expected range per the OLF Monitoring and Maintenance Plan, which is between 1.34 and 2.86 feet depending on the location
- Inclinometers were measured on July 22, August 18, and September 28
- Very little deflection was noted indicating that the movement observed during second quarter in the area between Berms 1 and 3 on the western end of the landfill did not continue

OLF Slumps

- Areas where the landfill cover is pushed up or rolling are noticeable on the western end of the OLF between Berms 2 and 3; however, the areas continue to remain free of any surface cracking
- A new 140-foot-long, narrow, continuous crack that runs along the north and south sides of Berm 1 was noticed during a nonroutine inspection of the OLF on July 22
  - This crack is in the same general location of large cracks that appeared in 2006 and 2007 and observed again during second quarter 2009
  - The crack was filled and compacted with Rocky Flats Alluvium on July 22; subsequent inspections throughout the third quarter showed no new movement

OLF Observed Crack Location

OLF Berm 1 Crack

OLF Berm 1 Crack

PLF Inspections and Surveys

- The quarterly inspection was completed on August 27
- No areas of concern were observed
- The vegetation inspection was completed on August 19

Questions?